

On a new Lamellibranch (Scioberetia australis) commensal with an Echinoderm. By FÉLIX BERNARD.

In studying the collection of Echinoderms made by the Cape-Horn Expedition in the years 1882-1883 I have had occasion to examine several specimens of a Spatangid, *Tripylus excavatus*, Phil., and I discovered that this sea-urchin is viviparous. But, while the majority of individuals carry young in process of development in the depressed ambulacral zones, in two specimens the young were absent and were replaced by a Lamellibranch, the maximum size of which does not exceed 3 millimetres. I have been able to study this animal by the dissection of three examples, and by means of sections in the case of a fourth: the state of preservation of the specimens is highly satisfactory.

The shell is entirely contained in the thickness of the *mantle*; it does not cover half the breadth of the animal. The mantle, on the contrary, envelops it completely. It is prolonged in front by a groove, which recalls the siphon of Gastropods; it is united together in the median line behind, and leaves only a posterior orifice, in the centre of a circular area. The *shell*, which is very thin, equivalve, and posteriorly truncate, bears radiating striæ, and its ventral margin is slightly plicate. No muscular nor pallial impressions. In the umbonal region, which is not projecting, the embryonic shell is seen. The cardinal margins of the two valves are in contact only along the embryonic shell; further on they are separated and connected by a delicate epidermic ligament. The ligament proper is internal and occupies the whole of the embryonic hinge; on dissolving it by means of hypochlorite of soda, it is seen that the hinge has retained exactly the conformation that it possessed in the embryos, which are met with in abundance with the adults. It exhibits at its summit a little ligamentary pit interrupting the cardinal margin, and on each side parallel crenatures similar to those which exist in the embryos of a multitude of Acephala (*Nucula*, *Mytilus*, *Arca*, &c.). In the adult the ligament runs out on to all these structures, and neither cardinal plateau nor teeth, properly so-called, are formed.

As opposed to this persistence of the embryonic type of shell the internal organization exhibits an advanced specialization.

The *adductor muscles*, greatly reduced in size, are seen (in a section) in their normal position. The *foot* is but little developed and is divided into an anterior and a posterior lobe; in the retracted condition due to immersion in spirit it displays a deep longitudinal groove, which manifestly corresponds to a creeping sole. No *byssus*. *Nervous system* normal, with very large ganglia.

Alimentary canal very simple. The mouth opens on the dorsal face of the visceral mass; on each side it is joined by a deep groove, bounded by two lips which represent the rudimentary labial palps, and extend on the sides as far as the base of the gills. Oesophagus straight, dorsal; stomach spacious, with a broad opening from the digestive gland (liver), which occupies the two anterior thirds of the

visceral mass and forms in three places the wall of the stomach. The latter exhibits on the right side a cæcum, which appears to secrete a hyaline style; the posterior intestine runs in a ventral direction and then towards the dorsal aspect; on issuing from the visceral mass it traverses the ventricle and terminates in a short bell-shaped rectum.

Kidneys greatly reduced, and situate at the posterior extremity of the visceral mass, at its junction with the mantle. Renal orifices behind those of the genital organs. *Genital gland* hermaphrodite, occupying the posterior third of the visceral mass.

The *gills* are the most interesting organs. On each side there exists a single branchial lamella bent round into a dihedron, of which the anterior ridge is occupied by a blood-vessel. One of the folds is united by its margin to the mantle and the other to the visceral mass, and along these lines of junction there runs a vessel (or sinus); moreover, the two gills are united together by their tips in the median line at the point where they detach themselves from the body. In this way there is produced a posterior mantle-cavity, communicating with the anterior one only by a median orifice between the visceral mass and the point of junction of the two gills. This posterior cavity is utilized as a *brood-chamber*, which appears to be of a very different nature from that which is found in *Entovalva* [so far as may be judged from the very brief description of Voeltzkow*]. Each branchial lamella is formed by a fold *continuous* with the mantle; its anterior surface bears strongly ciliated thickenings, resembling filaments, parallel to the cardinal margin, with a hæmal canal in their interior. Apertures at regular intervals, in the shape of a funnel widened posteriorly, traverse the lamella between the thickenings. It seems natural to regard this organ as a series of filaments fused together; but towards the tip of the gill, which appears to be in process of enlargement, we observe that the lamella becomes hollowed out by apertures, and exhibits fresh ciliated thickenings, while free filaments are nowhere visible.

The pallial and visceral lamellæ are united by transverse trabeculæ.

In a subsequent paper I shall discuss the interpretation that may be attached to this gill; I shall describe the anatomy of the embryos, and shall deal with the affinities of the animal, which seems to me to be allied to the Erycinids, the Galeommids, and to two forms which are still insufficiently known, *Chlamydoconcha*, Dall, and, especially, *Entovalva*, Voeltzkow †. Nevertheless the anatomical characters are, in my opinion, sufficiently distinct to justify a new generic division, and I propose for this Lamellibranch the name *Scioberetia australis* ‡.—*Comptes Rendus*, t. cxxi. no. 17 (October 21, 1895), pp. 569-571.

* Voeltzkow, *Entovalva mirabilis*, Zool. Jahrb., Abth. f. System. &c., Bd. v., 1890.

† Dall, 'Science' (New York), vol. iv. 1885; see Journal de Conchyl. t. xxxv.; Voeltzkow, *loc. cit.*

‡ This paper was prepared in the Malacological Laboratory of the Museum.